PTO/SB/21 (12-97)

Approved for use through 9/30/00. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMENRCE

Under the Paper Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

- (162
/	A

TRANSMITTA	L	Application Number	09/678	3,266	
FORM		Filing Date	10/03/	igned	
to be used for all correspondence after init	tial filing)	First Named Inventor	Xi, Mir		
(SEP 2 4 2001 LL)		Group Art Unit	1762	(C) (2) (S)	
		Examiner Name	Unass	igned	
Total Number of Pares in This Submission		Attorney Docket Number	4714 F	P1/AMI-00-140	
	ENCLOS	URES (check all that apply)		
X Fee Transmittal Form	Ass (for	signment Papers r an Application)		After Allowance Communication to Group	
Fee Attached		awing(s)		Appeal Communication to Board of Appeals and Interferences	
Amendment / Response	Lice	ensing-related Papers		Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)	
After Final	Pet and	ition Routing Slip (PTO/SB/69) I Accompanying Petition		Proprietary Information	
Affidavits/declaration(s)	L ⊢ Pro	Convert a visional Application		Status Letter	
Extension of Time Request	I I Cha	wer of Attorney, Revocation ange of Correspondence dress	\boxtimes	Additional Enclosure(s) (please identify below):	
Express Abandonment		minal Disclaimer		Petition Under 37 CFR § 1.48 (a) with Exhibits A-G attached	
				Return receipt postcard to Kenneth C. Brooks	
				Return receipt postcard to Applied Materials, Inc.	
Response to Missing Parts/ Incomplete Application	Remarks				
Response to Missing Parts under 37 CFR 1.52 or 1.53					
SIGNAT	URE OF A	PPLICANT, ATTORNEY, O	R AGEN	Γ	
Firm or Individual name Kenneth C. Brooks	or Renneth C. Brooks, Reg. No. 38,393				
Signature Ammu	Signature Samuel (()				
Date September 20, 2001					
CERTIFICATE OF MAILING					
I hereby certify that this correspondence envelope addressed to: Assistant Comm	I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date:				
Type or printed name Kenneth C. Brooks					
Signature Henry	1//		Date	September 20, 2001	

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time your are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PTO/SB/17 (11-00)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, ersons are required

FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT

(\$)	130.00
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to respond to a collection of	to respond to a collection of information unless it displays a valid OMB control number.			
Complete if Known				
Application Number	09/678,266	*		
Filing Date	10/03/00	S. C.		
First Named Inventor	Ming Xi, et al.	'A		
Examiner Name	Unassigned	1 2 1		
Group Art Unit	1762	7. 70,		
Attorney Docket No.	4714 PI/ AMI-00-11	10		

METHOD OF PAYMENT FEE CALCULATION (continued)						
The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:		Large Entity		L FEES Small Entity	S	
Deposit Account Number 50-0345	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
Deposit Account Applied Materials, Inc.	105	130	205	65	Surcharge – late filing fee or oath	
Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17	127	50	227	25	Surcharge – late provisional filing fee or cover sheet	
Applicant claims small entity status. See 37 CJR 1.27	139	130	139	130	Non-English specification	
2. Payment Enclosed:	147	2,520	147	2,520	For filing a request for ex parte reexamination	1
Check Credit Card Money Order Other	112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
FEE CALCULATION	113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
1. BASIC FILING FEE	115	110	215	55	Extension for reply within first month	
Large Entity Small Entity	116	390	216	195	Extension for reply within second month	
Fee Fee Fee Fee Description Code (\$) Code (\$) Fee Paid	117	890	217	445	Extension for reply within third month	
101 710 201 355 Utility filing fee	118	1,390	218	695	Extension for reply within fourth month	
106 320 206 160 Design filing fee	128	1,890	228	945	Extension for reply within fifth month	
107 490 207 245 Plant filing fee	119	310	219	155	Notice of Appeal	
108 710 208 355 Reissue filing fee	120	310	220	155	Filing a brief in support of an appeal	
114 150 214 75 Provisional filing fee	121	270	221	135	Request for oral hearing	
	138	1,510	138	1,510	Petition to institute a public use proceeding	
SUBTOTAL (1) (\$)0.00	140	110	240	55	Petition to revive – unavoidable	
2. EXTRA CLAIM FEES	141	1,240	241	620	Petition to revive – unintentional	
Fee from Extra Claims Below Fee Paid	142	1,240	242	620	Utility issue fee (or reissue)	
Total Claims $\begin{bmatrix} 20 \\ -20^{**} \end{bmatrix}$ $\begin{bmatrix} 0 \\ x \end{bmatrix}$ $\begin{bmatrix} 0 \\ \end{bmatrix}$ $\begin{bmatrix} 0 \\ \end{bmatrix}$	143	440	243	220	Design issue fee	
Independent $3 - 3^{**} = 0 \times 0 = 0$	144	600	244	300	Plant issue fee	
Multiple Dependent 0 = 0	122	130	122	130	Petitions to the Commissioner	130.00
	123	50	123	50	Processing fee under 37 CFR 1.17(q)	
Large Entity Small Entity Fee Fee Fee Fee Fee Description Code (\$) Code (\$)	126	180	126	180	Submission of Information Disclosure Stmt	
103 18 203 9 Claims in excess of 20	581	40	581	40	Recording each patent assignment per property (times number of properties)	
102 80 202 40 Independent claims in excess of 3	146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
104 270 204 135 Multiple dependent claim, if not paid	149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
109 80 209 40 **Reissue independent claims over original patent	179	710	279	355	Request for Continued Examination (RCE)	
110 18 210 9 **Reissue claims in excess of 20 and over original patent	169	900	169	900	Request for expedited examination of a design application	
SUBTOTAL (2) (\$) 00.00 Other fee (specify)						
"or number previously paid, if greater, For Reissues, see above Reduced by Basic Filing Fee Paid SUBTOTAL (3) (\$) 130.00			┸──┤│			
	Neudol	o by bas	rung r	ec raiu	300101AL (3) (3) 130.00	

SUBMITTED BY		Complete (if a	oplicable)
Name (Print/Type)	Kenneth C. Brooks Registration No. (Attorney/Agent) 38,393	Telephone	
Signature	Denieth C/Swes	Date	9/20/2001

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi, et al. Serial No: 09/678,266 Filed: October 3, 2000 PATENT APPLICATION
Group Art Unit: 1762
Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Petition Under 37 CFR § 1.48(a)

Hon. Commissioner for Patents Washington, D.C. 20231 TO TOO

Sir:

Applicants and Assignee hereby petition to amend the inventive entity in the above-identified patent application to **include three (3) additional co-inventors**, namely, Xinliang Lu, Ken Kaung Lai and Karl A. Littau pursuant to 37 CFR 1.48(a). Applicants and Assignee also hereby petition to amend the inventive entity in the above-identified patent application to **remove three (3) co-inventors**, namely, Jeong Soo Byun, Lawrence Chung-Lai Lei and Hua Chung pursuant to 37 CFR section 1.48(a). To that end, under 37 CFR 1.48(a)(1), please find accompanying this petition as Exhibits A, B and C, D, E, and F, statements from each of the aforementioned individuals, respectively, affirming that an error in inventorship occurred without deceptive intent.

Pursuant to 37 CFR 1.48(a)(2), please also find accompanying this petition a Combined Declaration and Power of Attorney executed by the actual inventors, namely, Ming Xi; Ashok Sinha; Moris Kori; Alfred W. Mak; Xinliang Lu; Ken Kaung Lai; and Karl A. Littau, comporting with the requirements of 37 CFR 1.63.

09/26/2001 MABDI1 00000139 500345 09678266 01 FC:122 130.00 CH Attached as Exhibit G, is the Consent of the Assignee in order to amend the inventive entity to include Xinliang Lu, Ken Kaung Lai and Karl A. Littau. Included with Exhibit G is a statement under 37 CFR section 3.73(b) establishing the right of the assignee to take action in the above-identified United States patent application, with supporting papers.

Finally, pursuant to 37 CFR 1.48(a)(3) authorization is given via the enclosed fee transmittal sheet to charge the requisite petition fee of \$130.00, as set forth in 37 CFR 1.17(i).

Based upon the foregoing, the Applicants and Assignee respectfully request that the petition be granted to amend the inventive entity to consist of the following individuals: Ming Xi; Ashok Sinha; Moris Kori; Alfred W. Mak; Xinliang Lu; Ken Kaung Lai; and Karl A. Littau.

CERTIFICATE OF MAILING

I hereby certify that this paper, along with any paper referred to as being attached hereto or enclosed herewith, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date of Transmittal:

Signed:

Typed Name: Kunneth C. Brenks

Respectfully submitted,

Kenneth C. Brooks

Reg. No 38,393

Attorney for Applicant

Telephone No. 512 527 0104

Facsimile No. 512 527 0107

NITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A TO THE REPORT OF THE PERSON OF

NUCLEATION LAYER

Statement of Xinliang Lu Under 37 CFR § 1.48(a)(1)

I, XINLIANG LU, states as follows:

- 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the aboveidentified patent application to include myself.
- 3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 08/10/2001

Xinliang Lu

EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Statement of Ken Kaung Lai Under 37 CFR § 1.48(a)(1)

I, KEN KAUNG LAI, states as follows:

- STROET OF THE PARTY. 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the aboveidentified patent application to include myself.
- 3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8-13-200

EXHIBIT B



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al. PATENT APPLICATION

Serial No: 09/678,266 Group Art Unit: 1762

Filed: October 3, 2000 Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Statement of Karl A. Littau Under 37 CFR § 1.48(a)(1)

I, KARL A. LITTAU, states as follows:

- 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application, by virtue of my contribution to the same and my Declaration under 37 CFR section 1.63 that is attached hereto.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to include myself.
- 3. The omission of myself as a named inventor in the patent application referred to above in paragraph one (1) resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 0//0/0/

Karl A Littau

EXHIBIT C



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For.

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Statement of Jeong Soo Byun Under 37 CFR § 1.48(a)(1)

I, JEONG SOO BYUN, states as follows:

- 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself Jeong Soo Byun, a citizen of South Korea having a residence address of 20975 Valley Green Drive #257, Cupertino, California 95014.
- 3. The addition of myself, Jeong Soo Byun resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8/10/2001

S By MU Jeong Soo Byun

EXHIBIT D



IN THE VONITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al. PATENT APPLICATION

Serial No: 09/678,266 Group Art Unit: 1762

Filed: October 3, 2000 Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Statement of Lawrence Chung-Lai Lei Under 37 CFR § 1.48(a)(1)

I, LAWRENCE CHUNG-LAI LEI, states as follows:

- 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself, Lawrence Chung-Lai Lei, a citizen of the United States having a residence address of 1594 Country Club Drive, Milpitas, California 95035.
- 3. The addition of myself, Lawrence Chung-Lai Lei resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8/10 (0)

Lawrence Chung-Lai Lei

EXHIBIT E



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al. PATENT APPLICATION

Serial No: 09/678,266 Group Art Unit: 1762

Filed: October 3, 2000 Examiner: Unassigned

For: METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Statement of Hua Chung Under 37 CFR § 1.48(a)(1)

I, HUA CHUNG, states as follows:

- 1. I am over the age of eighteen years and am a co-inventor of the invention defined by the claims, in the above-identified patent application.
- 2. I make this statement in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the above-identified patent application to remove myself, Hua Chung, a citizen of Taiwan having a residence address of 4645 Piper Drive, San Jose, California 95129.
- 3. The addition of myself, Hua Chung resulted in an error in the inventorship of the above-identified patent application that occurred without any deceptive intent on my part.

Date: 8//1/0/

Mua Chung

EXHIBIT F



COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration	is of the following type:
[] [] [] [x]	original divisional continuation continuation-in-part
MING XI, ASI	HOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND KARL A. LITTAU
My residence, po first and joint in entitled:	ost office address and citizenship are as stated below next to my name. I believe I am an original, wentor of the subject matter which is claimed and for which a patent is sought on the invention
	TITLE OF INVENTION
	AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING EQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER
	SPECIFICATION IDENTIFICATION
The specification	of which:
[] [X]	
[]	was described and claimed in PCT International Application No filed on
A	ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR
	at I have reviewed and understand the contents of the above-identified specification, including the ed by any amendment referred to above.
	ne duty to disclose all information I know to be material to patentability in accordance with Title 37, Regulations, 1.56,
and which is m likelihood that a issue as a patent,	aterial to the examination of this application; namely, information where there is a substantial reasonable Examiner would consider it important in deciding whether to allow the application to and
[]	In compliance with this duty there is attached an Information Disclosure Statement in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

паvшg а	i filmig date before	mat of the application(s)	of which priority is claimed	1.	
	[X] No such applications have been filed.[] Such applications have been filed as follows:				
Α.		CT/provisional application and carrier and carrier under the carrier carrier and carrier a		s. (6 mos. for design) prior to this	
	Country/PCT	Application No	<u>Date Filed</u>	Priority Claimed [] Yes [] No [] Yes [] No	
В.	All foreign appl application	ication(s), if any, filed	more than 12 mos. (6	mos for design) prior to this U.S.	
	Country: Application No: Filing date:				
		PRIORITY (CLAIM (35 U.S.C. §120)		
internation subject in provided that is in reasonal	ional application(s) matter of each of the d by the first parage that erial to the example Examiner woul ccurred between the	designating the United the claims of this application of Title 35, United Signation of this application described in the consider it important in	States of America that is in is not disclosed in that/thatates Code, \$112, I acknown (namely, information when deciding whether to allow	United States application(s) or PCT vare listed below and, insofar as the nose prior application(s) in the manner reledge the duty to disclose information are there is substantial likelihood that a w the application to issue as a patent) and or PCT international filing date of	
		applications have been fil lications have been filed,			
			Status		
	Serial No.	Filing Date	Patented Pending	Abandoned	
(09/605,593	6/28/2000	Pending		

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa Registration No. 25,610 Donald Verplancken Registration No. 33,217 Lawrence Edelman Registration No. 25,226 Joseph Bach Registration No. 37,771 Raymond Kam-On Kwong Registration No. 37,165 James C. Wilson Registration No. 35,412 Robert W. Mulcahy Registration No. 25,436 Kenneth C. Brooks Registration No. 38,393

Send correspondence to:

Direct telephone calls to:

Patent Counsel, MS/2061 Legal Affairs Dept. Applied Materials, Inc. Kenneth C. Brooks

Law Office of Kenneth C. Brooks

P.O. Box 450A

Full name of sole inventor: Ming Xi

Santa Clara, CA 95052

512 527-0104

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second inv	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	IISA	Country of Citizenship: U.S.A



Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

[]	original divisional
ii	continuation
[X]	continuation-in-part
MING XI, AS	SHOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND KARL A. LITTAU
My residence, p first and joint is entitled:	post office address and citizenship are as stated below next to my name. I believe I am an origina inventor of the subject matter which is claimed and for which a patent is sought on the invention
	TITLE OF INVENTION
	O AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER
	SPECIFICATION IDENTIFICATION
The specification	n of which:
[]	is attached hereto
[x]	was filed on October 3, 2001, having Serial No. 09/678,266 and was amended of (if applicable)
[]	was described and claimed in PCT International Application No filed or
	and as amended under PCT Article 19 on
Ā	ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR
hereby state the	at I have reviewed and understand the contents of the above-identified specification, including the ded by any amendment referred to above.
acknowledge the	ne duty to disclose all information I know to be material to patentability in accordance with Title 37 Regulations, 1.56,
and which is maikelihood that a ssue as a patent,	aterial to the examination of this application; namely, information where there is a substantial reasonable Examiner would consider it important in deciding whether to allow the application to and
[]	In compliance with this duty there is attached an Information Disclosure Statement in accordance with 37 CFR 1.98.

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

_	•	•	n(s) of which priority is cla	imed by the off the same subject matter imed.
		uch applications have bee applications have been fi		
A.		/PCT/provisional applicand any priority claims u		mos. (6 mos. for design) prior to this
	Country/PCT	Application No	<u>Date Filed</u>	Priority Claimed Yes [] No Yes [] No
В.	All foreign a application	pplication(s), if any, fil	led more than 12 mos.	(6 mos for design) prior to this U.S.
	Country: Application No Filing date:	0;		,
		PRIORIT	Y CLAIM (35 U.S.C. §12	0)
interna subject manne inform likeliho issue a	tional application matter of each r provided by the ation that is mate bood that a reason is a patent) whice	n(s) designating the Unit of the claims of this ap e first paragraph of Title erial to the examination of able Examiner would con	ted States of America that plication is not disclosed 35, United States Code, § of this application (namely naider it important in deci-	any United States application(s) or PCT is/are listed below and, insofar as the in that/those prior application(s) in the 112, I acknowledge the duty to disclose v, information where there is substantial ding whether to allow the application to application(s) and the national or PCT
	• •	ch applications have been applications have been fil		
	Serial No.	Filing Date	State Patented Pending	Abandoned

Pending

09/605,593

6/28/2000

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa

Donald Verplancken

Lawrence Edelman

Joseph Bach

Registration No. 25,610

Registration No. 33,217

Registration No. 25,226

Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. WilsonRegistration No. 35,412Robert W. MulcahyRegistration No. 25,436Kenneth C. BrooksRegistration No. 38,393

Send correspondence to: Direct telephone calls to:

Patent Counsel, MS/2061 Kenneth C. Brooks
Legal Affairs Dept. Law Office of Kenneth C. Brooks
Applied Materials, Inc. 512 527-0104

P.O. Box 450A

Santa Clara, CA 95052

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inven	ntor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second in	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.





Inventorio di esteri			n .
Inventor's signature: Residence:	Polo Alto Colifornia		Date:
Post Office Address:	Palo Alto, California 55 Hamilton Drive		
rusi Office Address:		11	
	Palo Alto, California 9430 U.S.A.		TIC A
	U.S.A.	Country of Citizenship:	U.S.A.
Full name of fourth inve	entor: Alfred W. Mak		. :
Inventor's signature:			Date:
Residence:	Union City, California		
Post Office Address	32722 Fellows Court		
	Union City, California 94	587	
	U.S.A.	Country of Citizenship:	U.S.A.
Full name of fifth inven	tor: Jeong Soo Byun	4	
	TOBU	11/	1/8/2021
Inventor's signature:	0, 5, 100	<u> </u>	Date: 1/7/200/
Residence:	Cupertino, California		·
Post Office Address	20975 Valley Green Drive		
	Cupertino, California 950		
	U.S.A. $\frac{p_{ij}}{p_{ij}}$	Country of Citizenship:	South Korea
Full name of sixth inver	itor: Lawrence Chung-Lai Le	ei .	
Inventor's signature:			Date:
Residence:	Milpitas, California		
Post Office Address	1594 Country Club Drive		
	Milpitas, California 95035	5	
	U.S.A.	Country of Citizenship:	U.S.A.
Full name of seventh in	ventor: Hua Chung		
Inventor's signature:			Date:
Residence:	San Jose, California		
Post Office Address	4645 Piper Drive		
	San Jose, California 9512	9	
	U.S.A.	Country of Citizenship:	Republic of China

(Declaration ends with this page)



Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

[] original[] divisional[] continuation[X] continuation-in-part				
MING XI, ASHOK SINHA, MORIS KORI, ALFRED W. MA KARL A. LITTA				
My residence, post office address and citizenship are as stated be first and joint inventor of the subject matter which is claimed a entitled:	ow next to my name. I believe I am an original, and for which a patent is sought on the invention			
TITLE OF INVENT	ION			
METHOD AND APPARATUS FOR DEPOSITING REFRA SEQUENTIAL DEPOSITION TECHNIQUES TO				
SPECIFICATION IDENTI	FICATION			
The specification of which:				
(if applicable)	Application No filed on rticle 19 on			
ACKNOWLEDGMENT OF REVIEW OF PAP	ERS AND DUTY OF CANDOR			
I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.				
I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, 1.56,				
and which is material to the examination of this application; no likelihood that a reasonable Examiner would consider it important issue as a patent, and	mely, information where there is a substantial in deciding whether to allow the application to			
[] In compliance with this duty there is attached an with 37 CFR 1.98.	Information Disclosure Statement in accordance			

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

_	_		ntry other than the Unite nat of the application(s) o		a filed by me on the same subject matte nimed.
			oplications have been file cations have been filed as		
A.			Yprovisional application ny priority claims under		mos. (6 mos. for design) prior to this
	Country/l	<u>PCT</u>	Application No	Date Filed	Priority Claimed [] Yes [] No [] Yes [] No
В.	All foreign		ation(s), if any, filed m	nore than 12 mos.	(6 mos for design) prior to this U.S.
	Country: Application Filing date:				
			PRIORITY CI	AIM (35 U.S.C. §12	20)
nterna subject nanner nform ikeliho ssue a	tional applicational application of ear provided by ation that is read to a patent) v	ation(s) of ach of the the first material sonable which oc	lesignating the United Si e claims of this applicat paragraph of Title 35, Use the examination of this Examiner would consider	tates of America that ion is not disclosed United States Code, § s application (namely it important in deci	any United States application(s) or PCT it is/are listed below and, insofar as the in that/those prior application(s) in the \$112, I acknowledge the duty to disclose y, information where there is substantial ding whether to allow the application to application(s) and the national or PCT
		-	plications have been filed ations have been filed, as		
				Stat	us

Patented Pending

Pending

Abandoned

Serial No.

09/605,593

Filing Date

6/28/2000

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

> Peter J. Sgarbossa Registration No. 25,610 Donald Verplancken Registration No. 33,217 Lawrence Edelman Registration No. 25,226 Joseph Bach Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. Wilson Registration No. 35,412 Robert W. Mulcahy Registration No. 25,436 Kenneth C. Brooks Registration No. 38,393

Send correspondence to: Direct telephone calls to:

Patent Counsel, MS/2061 Legal Affairs Dept. Applied Materials, Inc. P.O. Box 450A

512 527-0104

Santa Clara, CA 95052

Law Office of Kenneth C. Brooks

Kenneth C. Brooks

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inver	ntor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second in	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.

Full name of third inver	ntor: Moris Kori			
Inventor's signature:			Date:	
Residence:	Palo Alto, California			
Post Office Address:	55 Hamilton Drive		•	
	Palo Alto, California 94	301		
	U.S.A.	Country of Citizenship:	U.S.A.	
Full name of fourth inve	entor: Alfred W. Mak			
Inventor's signature:	JUN ZAWE	h	Date: 1/9/0/	
Residence:	Union City, California			
Post Office Address	32722 Fellows Court			
	Union City, California 9	4587		
	U.S.A.	Country of Citizenship:	U.S.A.	
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Inventor's signature:			Date:	
Residence: Cupertino, California				
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	Cupertino, California 95	5014		
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Inventor's signature:			Date:	
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	Milpitas, California 950			
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Residence:	San Jose, California			
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	San Jose, California 951			
	U.S.A.	Country of Citizenship:	Republic of China	

(Declaration ends with this page)



Atty. Dkt. No.4714 PI/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below nar	ned inventor, I hereby declare that:		OIPE	
This declaration	is of the following type:	ke	(K)	
[] [] [] [X]	original divisional continuation continuation-in-part	BIEN	CHADEMARK OFFI	
MING XI,	ASHOK SINHA, MORIS KORI, A CHUNG-LAI L	LFRED W. MAK, LEI, AND HUA CH	, JEONG SOO BYUN, LAWR HUNG	RENCE
My residence, p first and joint is entitled:	post office address and citizenship are nventor of the subject matter which	as stated below ne is claimed and for	ext to my name. I believe I am which a patent is sought on the	an original, ne invention
	TITLE	OF INVENTION		
	O AND APPARATUS FOR DEPOSITION TECHN			YING
		ON IDENTIFICA	TION	
The specificatio	n of which:			
[] [x]	was filed on 10/03/2000, under Ser (if applicable) was described and claimed in PCT	International Appl		filed on
,	ACKNOWLEDGMENT OF REVIE	EW OF PAPERS A	AND DUTY OF CANDOR	
I hereby state the claims, as amend	nat I have reviewed and understand the ded by any amendment referred to about	ne contents of the a	bove-identified specification, in	ncluding the
	he duty to disclose all information I k Regulations, 1.56,	now to be material t	to patentability in accordance w	ith Title 37,
and which is m likelihood that a issue as a patent	naterial to the examination of this a reasonable Examiner would consider, and	pplication; namely, er it important in de	, information where there is a eciding whether to allow the ap	substantial
[]	In compliance with this duty there i	is attached an Inform	mation Disclosure Statement in	accordance

PRIORITY CLAIM (35 U.S.C. §119)

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			lications have been filed		
Α.		-	• •	tion(s) filed within 12 der 35 U.S.C. § 119	mos. (6 mos. for design) prior to this
	Country	v/PCT	Application No	Date Filed	Priority Claimed Yes No Yes No
В.	All forei			d more than 12 mos.	(6 mos for design) prior to this U.S
	Country: Applicati Filing da	ion No:	f_{q}		
			PRIORITY	CLAIM (35 U.S.C. §12	20)
internati subject r provided that is m reasonab	onal appl matter of ed by the finaterial to ole Exami occurred be	ication(s) de each of the cl rst paragraph the examinat ner would co	signating the United aims of this applicated of Title 35, United ion of this application onsider it important	d States of America that ion is not disclosed in the States Code, §112, I acknow (namely, information in deciding whether to a	any United States application(s) or PCT it is/are listed below and, insofar as the at/those prior application(s) in the manner nowledge the duty to disclose information where there is substantial likelihood that a llow the application to issue as a patent ational or PCT international filing date of
			lications have been filed		
				Sta	tus
	Serial No	o. <u>Fili</u>	ng Date	Patented Pending	Abandoned
(09/605,59	3 6/2	8/2000	Pending	



POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

> Peter J. Sgarbossa Registration No. 25,610 Donald Verplancken Registration No. 33,217 Lawrence Edelman Registration No. 25,226 Michael B. Einschlag Registration No. 29,301 Joseph Bach Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. Wilson Registration No. 35,412 Robert W. Mulcahy Registration No. 25,436 Sarah Brashears Registration No. 37,087 Kenneth C. Brooks Registration No. 38,393

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Santa Clara, CA 95052

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Kenneth C. Brooks

Law Office of Kenneth C. Brooks

512 527-0104

DECLARATION

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Full name of first inven	tor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second inv	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.



Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

AS	a	Delow	nameu	IHV	entor	, ı	пег	еву	declar	etna

This declaration is of the fo	llowing type:			
[] original [] divisiona [] continuat [X]				
MING XI, ASHOK SIN	IA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND KARL A. LITTAU			
My residence, post office a first and joint inventor of tentitled:	ddress and citizenship are as stated below next to my name. I believe I am an original, he subject matter which is claimed and for which a patent is sought on the invention			
	TITLE OF INVENTION			
	ARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING AL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER			
	SPECIFICATION IDENTIFICATION			
The specification of which:				
	on October 3, 2001, having Serial No. 09/678,266 and was amended on (if applicable) bed and claimed in PCT International Application No filed on			
A CIZNOWII	and as amended under PCT Article 19 on			
	EDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR			
	viewed and understand the contents of the above-identified specification, including the mendment referred to above.			
I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, 1.56,				
and which is material to the likelihood that a reasonable issue as a patent, and	e examination of this application; namely, information where there is a substantial Examiner would consider it important in deciding whether to allow the application to			
[] In complia with 37 CF	nce with this duty there is attached an Information Disclosure Statement in accordance R 1.98.			

PRIORITY CLAIM (35 U.S.C. §119)

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having	a filing o	date befo	re that of the applica	ntion(s) of w	hich priority is	claime	d.	•	
	[X]		h applications have pplications have bee		llows:				
A.		_	PCT/provisional ap d any priority clain	• ,,		12 mos	. (6 mos. fo	r design) pri	or to this
	Count	ry/PCT	Application	<u>No</u>	Date Filed		Priorit [] Yes [[] Yes [-	
В.	All for		plication(s), if any	, filed mor	e than 12 mo	os. (6 n	nos for desi	gn) prior to	this U.S.
	Country Applica Filing of	tion No:							
	•		PRIO	RITY CLAI	M (35 U.S.C.	§120)			
internati subject manner informat likelihoo issue as	ional apposition atter of provided that and that and a paten	olication(f each of l by the is mater reasonal it) which	it under Title 35, Us) designating the Us of the claims of this first paragraph of T ial to the examination occurred between this application.	United States application itle 35, Unit on of this all consider it	es of America is not disclosed States Code pplication (nan important in d	that is/a sed in t e, §112, nely, in leciding	are listed bel hat/those prio I acknowled formation wh whether to a	ow and, inso or application lge the duty to here there is sallow the appl	far as the (s) in the o disclose substantial lication to
	[] [X]		n applications have be plications have been		llows:				
	a		T''' D			Status			
	Serial N	<u>lo</u> .	Filing Date	Pate	ented Pending		Abandoned		

Pending

09/605,593

6/28/2000

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa

Donald Verplancken

Lawrence Edelman

Joseph Bach

Registration No. 25,610

Registration No. 33,217

Registration No. 25,226

Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. Wilson Registration No. 35,412

Robert W. Mulcahy Registration No. 25,436 Kenneth C. Brooks Registration No. 38,393

Send correspondence to: Direct telephone calls to:

Patent Counsel, MS/2061 Kenneth C. Brooks
Legal Affairs Dept. Law Office of Kenneth C. Brooks
Applied Materials, Inc. 512 527-0104

P.O. Box 450A Santa Clara, CA 95052

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inven	tor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second inv	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.

Full name of third inver	ntor: Moris Kori	-	
Inventor's signature:	/ Maris Po	\sim	Date: 1.18.2001
Residence:	· Palo Alto, California		Date.
Post Office Address:	55 Hamilton Drive		·
	Palo Alto, California 943	801	
	U.S.A.	Country of Citizenship:	IISA
	0.0.71.	country of citizonship.	. 0.5.71.
Full name of fourth inv	entor: Alfred W. Mak		•
Inventor's signature:			Date:
Residence:	Union City, California		
Post Office Address	32722 Fellows Court		
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Inventor's signature:		•	Date:
Residence: Cupertino, California			
Post Office Address	20975 Valley Green Driv	ve #257	
Cupertino, California 95014			
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Full name of sixth inver	ntor: Lawrence Chung-Lai I	.ei	
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Residence:	Milpitas, California		
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	U.S.A.	Country of Citizenship:	U.S.A.
Full name of seventh in	ventor: Hua Chung		
Inventor's signature:			Date:
Residence:	San Jose, California	· · · · · · · · · · · · · · · · · · ·	
Post Office Address	4645 Piper Drive		
	San Jose, California 9512	29	
	U.S.A.	Country of Citizenship:	Republic of China
	~ · ~ · · · · ·		p

(Declaration ends with this page)





Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below nam	ned inventor, I hereby declare that:	OIPE
This declaration	is of the following type:	6
		FEB 0 9 2001 2
[]	original divisional	K &
[]	continuation	The state of the s
[X]	continuation-in-part	DEMARK
MING XI,		LFRED W. MAK, JEONG SOO BYUN, LAWRENCE LEI, AND HUA CHUNG
My residence, p first and joint is entitled:	oost office address and citizenship are nventor of the subject matter which i	e as stated below next to my name. I believe I am an original is claimed and for which a patent is sought on the invention
	TITLE (OF INVENTION
		TING REFRACTORY METAL LAYERS EMPLOYING NIQUES TO FORM A NUCLEATION LAYER
	,	ON IDENTIFICATION
The specificatio	n of which:	
[]	is attached hereto	•
[X]		rial No. 09/678,266 and was amended on
[]	(if applicable) was described and claimed in PCT	International Application No filed or
. ,	and as amended	under PCT Article 19 on
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I acknowledge t Code of Federal	he duty to disclose all information I kr Regulations, 1.56,	now to be material to patentability in accordance with Title 37
and which is mail and which is mail and the likelihood that a issue as a patent	reasonable Examiner would conside	pplication; namely, information where there is a substantial er it important in deciding whether to allow the application to
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naving a	i filing a	ate before tha	t of the application(s	s) of which priority is c	aimed.
	[X]		olications have been ations have been file		
Α.				ation(s) filed within 1 ader 35 U.S.C. § 119	2 mos. (6 mos. for design) prior to this
	Count	ry/PCT	Application No	Date Filed	Priority Claimed [] Yes [] No [] Yes [] No
В.	All for			ed more than 12 mos	s. (6 mos for design) prior to this U.S.
	Country Applica Filing o	ition No:	<i>f</i> ₄		
			PRIORITY	Y CLAIM (35 U.S.C. {	§120)
internation subject in provided that is marked which o	ional app matter of d by the naterial to ble Exam	olication(s) defeach of the confirst paragrap of the examination the confirst paragrap of the examination of the confirst	esignating the Unite claims of this applica th of Title 35, United ation of this applicationsider it important	ed States of America in tion is not disclosed in I States Code, §112, I a ion (namely, information in deciding whether to	of any United States application(s) or PCT that is/are listed below and, insofar as the that/those prior application(s) in the manner eknowledge the duty to disclose information on where there is substantial likelihood that a to allow the application to issue as a patent) to national or PCT international filing date of
	[] [X]	• •	plications have been ations have been file		
				S S	Status
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Pending

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P.O. Box 450A

Santa Clara, CA 95052

17

Kenneth C. Brooks

Law Office of Kenneth C. Brooks

512 527-0104

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Full name of first inven	tor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second inv	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.





Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

This declaration is of the following type:

[] original		
[] divisional		
[] continuation [X] continuation		
[A] continuatio	m-m-part	
MING XI, ASHOK SINHA	A, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNC KARL A. LITTAU	G LAI AND
My residence, post office add first and joint inventor of the entitled:	dress and citizenship are as stated below next to my name. I believe I am the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and for which a patent is sought on the subject matter which is claimed and the subject matter which is claimed and the subject matter which is claimed and the subject matter which is subject matter which whi	n an original, the invention
	TITLE OF INVENTION	
	RATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLO L DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER)YING
	SPECIFICATION IDENTIFICATION	
The specification of which:	•	
[] is attached h		
[X] was filed	on October 3, 2001, having Serial No. 09/678,266 and was a (if applicable)	imended on
was describ	ped and claimed in PCT International Application No.	filed on
	and as amended under PCT Article 19 on	
ACKNOWLI	EDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR	
I hereby state that I have revi claims, as amended by any am	iewed and understand the contents of the above-identified specification, is nendment referred to above.	ncluding the
I acknowledge the duty to disc Code of Federal Regulations,	close all information I know to be material to patentability in accordance w 1.56,	vith Title 37,
and which is material to the likelihood that a reasonable E issue as a patent, and	e examination of this application; namely, information where there is a Examiner would consider it important in deciding whether to allow the applications.	a substantial pplication to
[] In compliand with 37 CFR	ce with this duty there is attached an Information Disclosure Statement in R 1.98.	ı accordance

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

_	_		at of the application(s) of		a fried by me on the same subject matte aimed.
	[X]	_	oplications have been filed as		
A.			/provisional application by priority claims under		mos. (6 mos. for design) prior to this
	Count	try/PCT	Application No	Date Filed	Priority Claimed Yes No Yes No
В.	All for		ntion(s), if any, filed m	ore than 12 mos.	(6 mos for design) prior to this U.S
	Countr Applic Filing	ation No:			
			PRIORITY CL	AIM (35 U.S.C. §1:	20)
internat subject manner informa ikeliho ssue as	matter of provided that a parter of that a patter of that a pater	plication(s) dof each of the dof the dof the first is material to reasonable I	esignating the United State claims of this applicate paragraph of Title 35, Use the examination of this Examiner would consider curred between the filing	ates of America that on is not disclosed nited States Code, § application (namel it important in deci	any United States application(s) or PCT at is/are listed below and, insofar as the in that/those prior application(s) in the \$112, I acknowledge the duty to disclose y, information where there is substantial iding whether to allow the application to application(s) and the national or PCT
	[] [X]		olications have been filed ations have been filed, as	follows:	

Patented Pending

Pending

Filing Date

6/28/2000

Serial No.

09/605,593

Status

Abandoned

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa Registration No. 25,610
Donald Verplancken Registration No. 33,217
Lawrence Edelman Registration No. 25,226
Joseph Bach Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. WilsonRegistration No. 35,412Robert W. MulcahyRegistration No. 25,436Kenneth C. BrooksRegistration No. 38,393

Send correspondence to: Direct telephone calls to:

Patent Counsel, MS/2061 Kenneth C. Brooks
Legal Affairs Dept. Law Office of Kenneth C. Brooks
Applied Materials, Inc. 512 527-0104

P.O. Box 450A

Santa Clara, CA 95052

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inven	ntor: Ming Xi	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address:	138 Beaumere Way	
	Milpitas, California 95035	
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of second in	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.

Full name of third inve	entor: Moris Kori	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	55 Hamilton Drive	
	Palo Alto, California 94	1301
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fourth inv	ventor: Alfred W. Mak	
Inventor's signature:		Date:
Residence:	Union City, California	
Post Office Address	32722 Fellows Court	•
	Union City, California 9	94587
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fifth inver	ntor: Xinliang Lu	
Inventor's signature:		Date:
Residence:	Sunnyvale, California	
Post Office Address	685 Garland Avenue #54	4
	Sunnyvale, California 94	4086
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of sixth inven	ntor: Ken Kaung Lai	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address	1354 Terra Alta Drive	
	Milpitas, California 9503	35
	U.S.A.	Country of Citizenship: Republic of China (Taiwan)
Full name of seventh in	ventor: Karl A. Littau	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address	3278 Bryant Street	
	Palo Alto, California 943	303
	•	Country of Citizenshin: IIS A

(Declaration ends with this page)



This declaration is of the following type:

Atty. Dkt. No.4714 P1/AMI-00-11

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below	/ named	inventor,	I here	by d	eclare	that
------------	---------	-----------	--------	------	--------	------

[] [] [x]	original divisional continuation continuation-in-part
MING XI, AS	SHOK SINHA, MORIS KORI, ALFRED W. MAK, XINLIANG LU, KEN KAUNG LAI AND KARL A. LITTAU
My residence, p first and joint i entitled:	post office address and citizenship are as stated below next to my name. I believe I am an original, inventor of the subject matter which is claimed and for which a patent is sought on the invention
	TITLE OF INVENTION
	O AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER
	SPECIFICATION IDENTIFICATION
The specificatio	n of which:
[] [X]	is attached hereto was filed on October 3, 2001, having Serial No. 09/678,266 and was amended on
A	ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR
hereby state the	at I have reviewed and understand the contents of the above-identified specification, including the ded by any amendment referred to above.
acknowledge the Code of Federal	ne duty to disclose all information I know to be material to patentability in accordance with Title 37, Regulations, 1.56,
and which is m ikelihood that a ssue as a patent,	aterial to the examination of this application; namely, information where there is a substantial reasonable Examiner would consider it important in deciding whether to allow the application to and
[]	In compliance with this duty there is attached an Information Disclosure Statement in accordance with 27 CFP 1.08

PRIORITY CLAIM (35 U.S.C. §119)

I hereby claim foreign priority benefits under Title 35, United States Code, §119, of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America or of any United States Provisional Application(s) listed below, and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

_	_		itry other than that at of the application				•	e same subjec	t matte
	[X] []	_	plications have be ations have been		ollows:				
Α.			provisional appl y priority claims			12 mos.	(6 mos. for	design) prior	to thi
	Country	//PCT	Application No	2	<u>Date Filed</u>	[Priority Yes [] Yes []	No	
В.	All fore	~	tion(s), if any,	filed mo	re than 12 mo	s. (6 me	os for design) prior to th	is U.S
	Country: Applicate Filing da	ion No:							
			PRIORI	TY CLA	AIM (35 U.S.C. §	§120)			
nternasubject manner nforma ikeliho ssue a	tional applematter of provided ation that is pod that a result a patent)	ication(s) deach of the by the first smaterial te easonable E which occ	der Title 35, Unitesignating the Urite claims of this aparagraph of Title the examination examiner would courred between the application.	nited State of the state of this state on sider in the state of the st	tes of America to is not disclost ited States Code application (name t important in description).	that is/ar ed in the e, §112, I nely, info eciding	e listed below at/those prior acknowledge ormation when whether to allow	w and, insofar application(s) the duty to do the there is subow the application.	as the in the disclose stantia
			olications have be ations have been f		ollows:				
					S	Status			
	Serial No	. Fil	ing Date	Pa	tented Pending		Abandoned		

Pending

09/605,593

6/28/2000

POWER OF ATTORNEY

I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Peter J. Sgarbossa

Donald Verplancken

Lawrence Edelman

Joseph Bach

Registration No. 25,610

Registration No. 33,217

Registration No. 25,226

Registration No. 37,771

Raymond Kam-On Kwong Registration No. 37,165

James C. WilsonRegistration No. 35,412Robert W. MulcahyRegistration No. 25,436Kenneth C. BrooksRegistration No. 38,393

Send correspondence to: Direct telephone calls to:

Patent Counsel, MS/2061 Kenneth C. Brooks
Legal Affairs Dept. Law Office of Kenneth C. Brooks
Applied Materials, Inc. 512 527-0104

P.O. Box 450A

Santa Clara, CA 95052

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Sec. 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full name of sole inver	ntor: Ming Xi	
Inventor's signature: Residence:	Milpitas, California	Date: 8/10/07
Post Office Address:	138 Beaumere Way Milpitas, California 95035 U.S.A.	Country of Citizenship: People's Republic of China
Full name of second in	ventor: Ashok Sinha	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	4176 Hubbart Drive	
	Palo Alto, California 95014	
	U.S.A.	Country of Citizenship: U.S.A.

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Robert W. Mulcahy Registration No. 25,436 Kenneth C. Brooks Registration No. 38,393

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Full name of sole inventor: Ming Xi Inventor's signature: Date: Milpitas, California Residence: Post Office Address: 138 Beaumere Way Milpitas, California 95035 U.S.A. Country of Citizenship: People's Republic of China Full name of second inventor: Ashok Sinha 8/21/01 Carly Inventor's signature: Palo Alto, California Residence: Post Office Address: 4176 Hubbart Drive Palo Alto, California 95014 U.S.A. Country of Citizenship: U.S.A.

Full name of third inve	ntor: Moris Kori		
Inventor's signature:	Monis Kan	\	Date: 8.13.2001
Residence:	Palo Alto, California		
Post Office Address:	55 Hamilton Drive	•	•
	Palo Alto, California 943		
	U.S.A.	Country of Citizenship	: U.S.A.
Full name of fourth inv	entor: Alfred W. Mak		
Inventor's signature:			Date:
Residence:	Union City, California		
Post Office Address	32722 Fellows Court		
	Union City, California 94	587	
	U.S.A.	Country of Citizenship	: U.S.A.
Full name of fifth inven	tor: Xinliang Lu 7		
Inventor's signature:			Date:
Residence:	Sunnyvale, California		
Post Office Address	685 Garland Avenue #54		
	Sunnyvale, California 940		
	U.S.A.	Country of Citizenship:	People's Republic of China
Full name of sixth inver	ntor: Ken Kaung Lai		
Inventor's signature:			Date:
Residence:	Milpitas, California	· · · · · · · · · · · · · · · · · · ·	
Post Office Address	1354 Terra Alta Drive		
	Milpitas, California 95035	5	
	U.S.A.	Country of Citizenship:	Republic of China (Taiwan)
Full name of seventh inv	ventor: Karl A. Littau		
Inventor's signature:			Date:
Residence:	Palo Alto, California		
Post Office Address	3278 Bryant Street		
	Palo Alto, California 9430	3	
	U.S.A.	Country of Citizenship:	U.S.A.

Full name of third inve	entor: Moris Kori		
Inventor's signature: _			Date:
Residence:	Palo Alto, California		
Post Office Address:	55 Hamilton Drive		
	Palo Alto, California 9430	01	
	U.S.A.	Country of Citizenship	: U.S.A.
Full name of fourth inv	ventor: Alfred W. Mak		
	$\supset \cup$	Λ	01/
Inventor's signature:	HM () A		Date: 8 10 0 1
Residence:	Unioh City, California	•	1 /
Post Office Address	32722 Fellows Court		
	Union City, California 94:	587	
	U.S.A.	Country of Citizenship:	U.S.A.
Full name of fifth inver	ntor: Xinliang Lu		
Inventor's signature:			Date:
Residence:	Sunnyvale, California		
Post Office Address	685 Garland Avenue #54		
	Sunnyvale, California 940	86	
	U.S.A.	Country of Citizenship:	People's Republic of China
Full name of sixth inver	ntor: Ken Kaung Lai		
Inventor's signature:			Date:
Residence:	Milpitas, California		,
Post Office Address	1354 Terra Alta Drive		
	Milpitas, California 95035		
	U.S.A.	Country of Citizenship:	Republic of China (Taiwan)
Full name of seventh in	ventor: Karl A. Littau		
Inventor's signature:			Date:
Residence:	Palo Alto, California		
Post Office Address	3278 Bryant Street		
	Palo Alto, California 9430	3	
	II C A		TI C A

Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	55 Hamilton Drive	
	Palo Alto, California 943	301
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fourth inv	entor: Alfred W. Mak	
Inventor's signature:		Date:
Residence:	Union City, California	
Post Office Address	32722 Fellows Court	
·	Union City, California 94	4587
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fifth inven	tor: Xinliang Lu	
		08/11/201
Inventor's signature:		Date: 08/10/200/
Residence:	Sunnyvale, California	
Post Office Address	685 Garland Avenue #54	
	Sunnyvale, California 94	086
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of sixth inver	ntor: Ken Kaung Lai	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address	1354 Terra Alta Drive	
	Milpitas, California 9503	5
	U.S.A.	Country of Citizenship: Republic of China (Taiwan)
Full name of seventh in	ventor: Karl A. Littau	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address	3278 Bryant Street	
· · · · · · · · · · · · · · · · · · ·	Palo Alto, California 943	03
	U.S.A.	Country of Citizenship: U.S.A.

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Residence:	Palo Alto, California	 	
Post Office Address:	55 Hamilton Drive		
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	U.S.A.	Country of Citizenship	: U.S.A.
Full name of fifth inven	tor: Xinliang Lu		
Inventor's signature:			Date:
Residence:	Sunnyvale, California		
Post Office Address	685 Garland Avenue #54		
	Sunnyvale, California 94	086	
	U.S.A.	Country of Citizenship:	People's Republic of China
Full name of sixth inver	ntor: Ken Kaung Lai		
)	Date: 8-13-2001
Inventor's signature:	1 and 1	M	Date: 0 13 2001
Residence:	Milpitas, California		
Post Office Address	1354 Terra Alta Drive	_	
	Milpitas, California 9503		
	U.S.A.	Country of Citizenship:	Republic of China (Taiwan)
Full name of seventh in	ventor: Karl A. Littau		
Inventor's signature:			Date:
Residence:	Palo Alto, California		
Post Office Address	3278 Bryant Street		
	Palo Alto, California 943	03	
	U.S.A.	Country of Citizenship:	U.S.A.

(1)

Full name of third inver	ntor: Moris Kori	
Inventor's signature:		Date:
Residence:	Palo Alto, California	
Post Office Address:	55 Hamilton Drive	
	Palo Alto, California 94.	301
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fourth inve	entor: Alfred W. Mak	
Inventor's signature:		Date:
Residence:	Union City, California	
Post Office Address	32722 Fellows Court	
	Union City, California 9	1587
	U.S.A.	Country of Citizenship: U.S.A.
Full name of fifth inven	tor: Xinliang Lu	
Inventor's signature:		Date:
Residence:	Sunnyvale, California	
Post Office Address	685 Garland Avenue #54	
	Sunnyvale, California 94	086
	U.S.A.	Country of Citizenship: People's Republic of China
Full name of sixth inver	ntor: Ken Kaung Lai	
Inventor's signature:		Date:
Residence:	Milpitas, California	
Post Office Address	1354 Terra Alta Drive	•
	Milpitas, California 9503	5
	U.S.A.	Country of Citizenship: Republic of China (Taiwan)
Full name of seventh in	ventor: Karl A. Litteu	
	ventor: Karl A. Littau	
Inventor's signature:	The wood	Date: 8/10/0/
Residence:	Palo Alto, California	
Post Office Address	3278 Bryant Street	
	Palo Alto, California 943	03
	U.S.A.	Country of Citizenship: U.S.A.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Xi et al.

Serial No: 09/678,266

Filed: October 3, 2000

PATENT APPLICATION

Group Art Unit: 1762

Examiner: Unassigned

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS For:

EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A

NUCLEATION LAYER

Consent of Assignee, Applied Materials, Inc. Under 37 CFR

I, JOSEPH J. SWEENEY, states as follows:

- 1. I am over the age of eighteen years and am an officer of the Assignee of the ights, in the above-identified patent application, by virtue of my position as Assistant Secretary of Applied Materials, Inc., a Delaware Corporation having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054.
- 2. I proffer this consent in support of a Petition Under 37 CFR § 1.48(a), which I am informed, and which I believe, will be filed herewith to amend the inventorship of the aboveidentified patent application to include Xinliang Lu, a citizen of the People's Republic of China having a residence address of 685 Garland Avenue #54, Sunnyvale, California 94086; Ken Kaung Lai, a citizen of Taiwan having a residence address of 1354 Terra Alta Drive, Milpitas, California 95035; and Karl A. Littau, a citizen of the United States of America having a residence address of 3278 Bryant Street, Palo Alto, California 94303. I also proffer this consent to amend the inventorship of the above-identified patent application to remove Jeong Soo Byun, a citizen of South Korea having a residence address of 20975 Valley Green Drive #257, Cupertino, California 95014; Lawrence Chung-Lai Lei, a citizen of the United States of America having a residence address of 1594 Country Club Drive, Milpitas, California 95035; and Hua Chung, a citizen of Taiwan having a residence address of 4645 Piper Drive, San Jose, California 95129.

Date: September 5, 2001

Group Vice President and

Assistant Secretary

EXHIBIT G

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Xi, et al.

PATENT APPLICATION

Serial No: 09/678,266

Group Art Unit: 1762

Filed: October 3, 2000

Examiner: Unassigned

For:

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION

TECHNIQUES TO FORM A NUCLEATION LAYER

<u>Supplemental Sheet to Statement Under 3.73(b) Listing Documents In</u> <u>The Chain of Title</u>

From: Ming Xi To: Applied Materials, Inc.

To: Applied Materials, Inc.

From: Ashok Sinha
From: Morris Kori

To: Applied Materials, Inc.

From: Alfred W. Mak

To: Applied Materials, Inc.

From: Xinliang Lu

To: Applied Materials, Inc.

From: Ken Kuang Lai

To: Applied Materials, Inc.

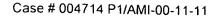
From: Karl Littau

To: Applied Materials, Inc.

Approved for use through 09/30/2000. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Resustigned no persons are required to respond to a collection of information unless it displays a valid OMB control number

STATEMENT UNDER 37 CFR 3.73(b) Applicant/Patent Owner: Joseph J. Sweeney Application No./Patent No.: 09/678, 266 Filed/Issue Date: October 3, 2000 METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER Entitled: APPLIED MATERIALS, INC. , a Delaware Corporation (Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.) states that it is: the assignee of the entire right, title, and interest; or an assignee of an undivided part interest in the patent application/patent identified above by virtue of either: A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached. OR B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below: The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached. To: The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached. To:_ The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached. [X] Additional documents in the chain of title are listed on a supplemental sheet. Copies of assignments or other documents in the chain of title are attached. [NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the PTO. See MPEP 302-302.8] The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee. Signature Typed or printed name Group Vice President and Assistant Secretary Title



WHEREAS:

Names and Addresses of the Inventors:

1	Ming Xi 138 Beaumere Way Milpitas, California 95035	2	Ashok Sinha 4176 Hubbart Drive Palo Alto, California 94306
3	Moris Kori 55 Hamilton Court Palo Alto, California 94301	4	Alfred W. Mak 32722 Fellows Court Union City, California 94587
5	Jeong Soo Byun 20975 Valley Green Drive #257 Cupertino, California 95014	6	Lawrence Chung-Lai Lei 1594 Country Club Drive Milpitas, California 95035
7	Hua Chung 4645 Piper Drive San Jose, California 95129		

(hereinafter referred to as Assignors), has invented a certain invention entitled:

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

for which application for Letters Patent in the United States was filed on October 3, 2000, under Serial No. 09/678,266, executed on even date herewith;

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

- 1. Said Assignors hereby sells, assigns, transfers and conveys to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.
- 2. Said Assignors hereby covenants and agrees to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest to said Invention herein conveyed in any and all countries and groups of countries. Such cooperation by said Assignors shall include prompt production of pertinent facts and documents, giving testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or

desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefor and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

- 3. The term and covenants of this agreement shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Assignors, their respective heirs, legal representatives and assigns.
- 4. Said Assignors hereby warrants and represents that he has not entered and will not enter into any assignment, contract, or understanding in conflict herewith.
- 5. Said Assignors hereby authorizes and requests the attorneys of record to insert, where indicated above, the application number and filing date of said application when known

IN WITNESS WHEREOF, the said Assignors has executed and delivered this instrument to said Assignee on the dates indicated below.

Jan. 9th, 2001	mM	
<i>;</i>	Ming Xi	
, 2001		
	Ashok Sinha	
, 2001		
·	Moris Kori	
, 2001		
	Alfred W. Mak	
, 2001		
	Jeong Soo Byun	
, 2001		
	Lawrence Chung-Lai Lei	
, 2001		
	Hua Chung	

WHEREAS:

Names and Addresses of the Inventors:

1	Ming Xi 138 Beaumere Way Milpitas, California 95035	2	Ashok Sinha 4176 Hubbart Drive Palo Alto, California 94306
3	Moris Kori 55 Hamilton Court Palo Alto, California 94301	4	Alfred W. Mak 32722 Fellows Court Union City, California 94587
5	Jeong Soo Byun 20975 Valley Green Drive #257 Cupertino, California 95014	6	Lawrence Chung-Lai Lei 1594 Country Club Drive Milpitas, California 95035
7	Hua Chung 4645 Piper Drive San Jose, California 95129		•

(hereinafter referred to as Assignors), has invented a certain invention entitled:

METHOD AND APPARATUS FOR DEPOSITING REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

for which application for Letters Patent in the United States was filed on October 3, 2000, under Serial No. 09/678,266, executed on even date herewith;

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

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, 2001	Lawrence Chung-Lai Lei
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, 2001	Ming Xi	
, 2001	Ashok Sinha	
1/18/, 2001	Moris Kori	-
, 2001	Alfred W. Mak	
, 2001	Jeong Soo Byun	·
, 2001	Lawrence Chung-Lai Lei	
, 2001	Hua Chung	

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, 2001	Ming Xi
, 2001	Ashok Sinha
, 2001	Moris Kori
, 2001	Alfred W. Mak
, 2001	Jeong Soo Byun
, 2001	Lawrence Chung-Lai Lei
, 2001	Hua Chung

WHEREAS:

Names and Addresses of Inventors:

1)	Xinliang Lu 685 Garland Avenue #54 Sunnyvale, California 94086	2)	Ken Kaung Lai 1354 Terra Alta Drive Milpitas, California 95035	
3)	Karl A. Littau 3278 Bryant Street Palo Alto, California 94303		·	

(hereinafter referred to as Assignors), have invented a certain invention entitled:

METHOD AND APPARATUS FOR DEPOSITINGH REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

for which application for	Letters Patent in the	United States	is filed herewith,	
having serial number	09/678,266,	filed on	October 3, 2000	

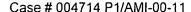
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- 5. Said Assignors hereby authorize and request the attorneys of record to insert, where indicated above, the application number and filing date of said application when known.

IN W Assignee on	ITNESS WHEREOF, the said A the dates indicated below.	ssignors have executed and delivered this instrument to said
1)	<u>08/(0</u> , 2001	Xinliang Lu
2)	, 2001	Ken Kaung Lai
3)	, 2001	Karl A. Littau



WHEREAS:

Names and Addresses of Inventors:

1)	Xinliang Lu 685 Garland Avenue #54 Sunnyvale, California 94086	2)	Ken Kaung Lai 1354 Terra Alta Drive Milpitas, California 95035
3)	Karl A. Littau 3278 Bryant Street Palo Alto, California 94303		

(hereinafter referred to as Assignors), have invented a certain invention entitled:

METHOD AND APPARATUS FOR DEPOSITINGH REFRACTORY METAL LAYERS EMPLOYING SEQUENTIAL DEPOSITION TECHNIQUES TO FORM A NUCLEATION LAYER

for which application for Let	ters Patent in the	United States	is filed herewith,
having serial number	_09/678,266,	filed on	October 3, 2000

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as the Application), and the invention disclosed therein (hereinafter referred to as the Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as the Patents) thereon granted in any and all countries and groups of countries.

NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignors to have been received in full from said Assignee:

- 1. Said Assignors hereby sell, assign, transfer and convey to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.
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IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1)	, 2001	
2)	August 13th, 2001	Xinliang Lu Ken Kaung Lai
3)	, 2001	Karl A Littau

WHEREAS:

Names and Addresses of Inventors:

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having serial number	09/678,266	, filed on	October 3, 2000	_
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2)	, 2001		<u> </u>
3)	<u>8/lo</u> , 2001	Ken Kaung Lai	